

Listing of the Claims:

The following is a complete listing of all the claims in the application, with an indication of the status of each:

1. (Currently amended) A process for producing homogenous blends of chemical agents and elastomeric fluoropolymers, comprising the steps of:

combining, in the presence of a supercritical carbon dioxide, at least one fluoropolymer capable of expansion in the presence of said supercritical carbon dioxide, which includes at least one functional group distributed at one or more locations along its chemical backbone, with at least one chemical agent that forms a crystalline solid and which includes at least one functional group, ~~which~~ that is capable of associating with said at least one functional group distributed at said one or more locations along the chemical backbone of said fluoropolymer, said combining step permits said at least one chemical agent to impregnate within said at least one fluoropolymer;

permitting said at least one functional group on said at least one chemical agent to associate with said one functional group distributed at said one or more locations along the chemical backbone of said fluoropolymer, said permitting step producing a blend wherein said at least one fluoropolymer is associated with said at least one chemical agent at at least one of said one or more locations along the chemical backbone of said fluoropolymer and wherein said chemical agent is in crystalline form;

agitating or masticating said blend so as to produce a free flowing powder comprised of particles including said chemical agent in its crystalline form associated with said at least one fluoropolymer; and

separating said supercritical carbon dioxide from said blend after said permitting step.

2. (Original) The process of claim 1 wherein said at least one chemical agent includes at least two functional groups, each of which can associate with said at least one functional group distributed at said one or more locations along the chemical backbone of said fluoropolymer so as to either combine two polymer chains of said fluoropolymer or to link two locations of said one or more locations

or one polymer chain of said fluoropolymer.

3. (Original) The process of claim 2 wherein said two polymer chains of said fluoropolymer are combined by said chemical agent.

4. (Original) The process of claim 1 wherein said at least one fluoropolymer includes at least two different polymers.

5. (Currently amended) A process for producing homogenous blends of chemical agents and elastomeric fluoropolymers, comprising the steps of:

combining, in the presence of a supercritical carbon dioxide, at least one fluoropolymer capable of expansion in the presence of said supercritical carbon dioxide, which includes at least one functional group distributed at one or more locations along its chemical backbone, with at least ~~The process of claim 1 wherein said at least one chemical agent includes at least two different chemical agents~~ each of which includes at least one functional group, and each of which is capable of associating with said at least one functional group distributed at said one or more locations along the chemical backbone of said fluoropolymer, said combining step permits said at least two different chemical agents to impregnate within said at least one fluoropolymer;

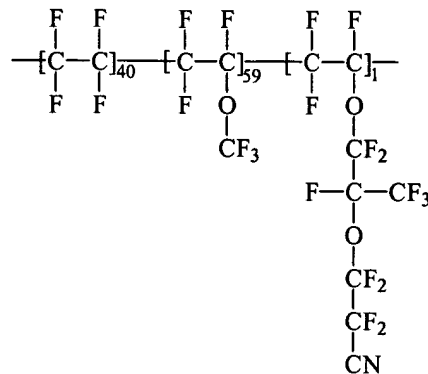
permitting said at least one functional group on said two different chemical agents to associate with said one functional group distributed at said one or more locations along the chemical backbone of said fluoropolymer, said permitting step producing a blend wherein said at least one fluoropolymer is associated with said at least different chemical agents at at least one of said one or more locations along the chemical backbone of said fluoropolymer; and

separating said supercritical carbon dioxide from said blend after said permitting step.

6. (Currently amended) A process for producing homogenous blends of chemical agents and elastomeric fluoropolymers, comprising the steps of:

combining, in the presence of a supercritical carbon dioxide, at least one fluoropolymer capable of expansion in the presence of said supercritical carbon

dioxide, which includes at least one functional group distributed at one or more locations along its chemical backbone, with at least one chemical agent which includes at least one functional group which is capable of associating with said at least one functional group distributed at said one or more locations along the chemical backbone of said fluoropolymer, said combining step permits said at least one chemical agent to impregnate within said at least one fluoropolymer.
~~The process of claim 1 wherein said at least one polymer is~~



permitting said at least one functional group on said at least one chemical agent to associate with said one functional group distributed at said one or more locations along the chemical backbone of said fluoropolymer, said permitting step producing a blend wherein said at least one fluoropolymer is associated with said at least one chemical agent at at least one of said one or more locations along the chemical backbone of said fluoropolymer; and

separating said supercritical carbon dioxide from said blend after said permitting step.

7. (Currently amended) A process for producing homogenous blends of chemical agents and elastomeric fluoropolymers, comprising the steps of:

combining, in the presence of a supercritical carbon dioxide, at least one fluoropolymer capable of expansion in the presence of said supercritical carbon dioxide, which includes at least one functional group distributed at one or more locations along its chemical backbone that
~~The process of claim 1 wherein said at least one functional group distributed at said one or more locations along the chemical backbone of said at least one fluoropolymer is selected from the group consisting of cyanide groups, hydroxyl groups, amine groups, carbonyl groups,~~

vinyl groups, ethers, esters, and aromatics, with at least one chemical agent which includes at least one functional group which is capable of associating with said at least one functional group distributed at said one or more locations along the chemical backbone of said fluoropolymer, said combining step permits said at least one chemical agent to impregnate within said at least one fluoropolymer;

permitting said at least one functional group on said at least one chemical agent to associate with said one functional group distributed at said one or more locations along the chemical backbone of said fluoropolymer, said permitting step producing a blend wherein said at least one fluoropolymer is associated with said at least one chemical agent at at least one of said one or more locations along the chemical backbone of said fluoropolymer; and

separating said supercritical carbon dioxide from said blend after said permitting step.

8. (Currently amended) A process for producing homogenous blends of chemical agents and elastomeric fluoropolymers, comprising the steps of:

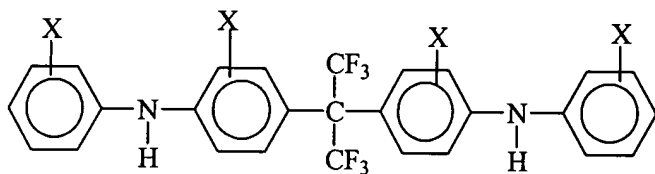
combining, in the presence of a supercritical carbon dioxide, at least one fluoropolymer capable of expansion in the presence of said supercritical carbon dioxide, which includes at least one functional group distributed at one or more locations along its chemical backbone, with at least one chemical agent which includes at least one functional group ~~The process of claim 1 wherein said at least one functional group on said chemical agent is selected from the group consisting of cyanide groups, hydroxyl groups, amine groups, carbonyl groups, vinyl groups, ethers, esters, and aromatics~~ and which is capable of associating with said at least one functional group distributed at said one or more locations along the chemical backbone of said fluoropolymer, said combining step permits said at least one chemical agent to impregnate within said at least one fluoropolymer;

permitting said at least one functional group on said at least one chemical agent to associate with said one functional group distributed at said one or more locations along the chemical backbone of said fluoropolymer, said permitting step producing a blend wherein said at least one fluoropolymer is associated with said at least one chemical agent at at least one of said one or more locations along the chemical backbone of said fluoropolymer; and

separating said supercritical carbon dioxide from said blend after said permitting step.

9. (Currently amended) A process for producing homogenous blends of chemical agents and elastomeric fluoropolymers, comprising the steps of:

combining, in the presence of a supercritical carbon dioxide, at least one fluoropolymer capable of expansion in the presence of said supercritical carbon dioxide, which includes at least one functional group distributed at one or more locations along its chemical backbone, with at least one chemical agent which includes at least one functional group which is capable of associating with said at least one functional group distributed at said one or more locations along the chemical backbone of said fluoropolymer ~~The process of claim 1~~ wherein said at least one chemical agent is



where X can be a hydrogen or a functional group and can be the same or different at different locations, said combining step permits said at least one chemical agent to impregnate within said at least one fluoropolymer;

permitting said at least one functional group on said at least one chemical agent to associate with said one functional group distributed at said one or more locations along the chemical backbone of said fluoropolymer, said permitting step producing a blend wherein said at least one fluoropolymer is associated with said at least one chemical agent at at least one of said one or more locations along the chemical backbone of said fluoropolymer; and

separating said supercritical carbon dioxide from said blend after said permitting step.

10. (original) The process of claim 1 wherein said chemical agent is present in said combining step in an amount less than or about equal to an amount needed to titrate all of said one or more functional groups distributed at said one or more

locations along the chemical backbone of said fluoropolymer.

11. (Currently amended) The process of claim 1 ~~further comprising the step of agitating said fluoropolymer~~ wherein said agitating or masticating step is performed during said permitting step.

12. (Original) The process of claim 11 wherein said step of agitating is performed by ball milling.

13. (Original) The process of claim 11 wherein said step of agitating is performed using a brabender apparatus.

14. (Original) The process of claim 11 wherein at least one of said combining and said permitting steps are performed at temperature and pressure conditions which, absent said supercritical carbon dioxide and agitation occurring said agitating step, are not sufficient to induce significant chemical reaction among said at least one polymer and said at least one chemical reagent.

15. (Original) The process of claim 11 wherein at least one of said combining and permitting steps are performed at a pressure of less than about 10,000 psi.

16. (original) The process of claim 1 wherein said removing step is achieved during a spraying operation.

17. (Original) The process of claim 1 wherein said removing step is achieved by abrupt pressure reduction.

18. (original) The process of claim 1 wherein said at least one chemical agent is a crosslinking additive.

19. (Original) The process of claim 1 wherein said at least one chemical agent is selected from the group consisting of crosslinking agents, dyes, pigments, fillers, and tougheners.

20. (original) The process of claim 1 further comprising the step of solubilizing said at least one chemical agent in a solvent that dissolves in said supercritical carbon dioxide prior to said step of combining.

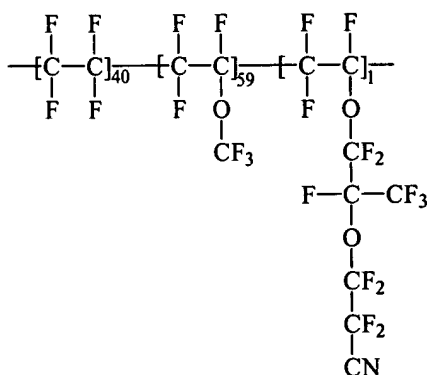
21. (Original) The process of claim 20 wherein said step of solubilizing is performed prior to said step of combining.

22. (original) The process of claim 20 wherein said at least one chemical agent is solubilized in said solvent to approximately to saturation.

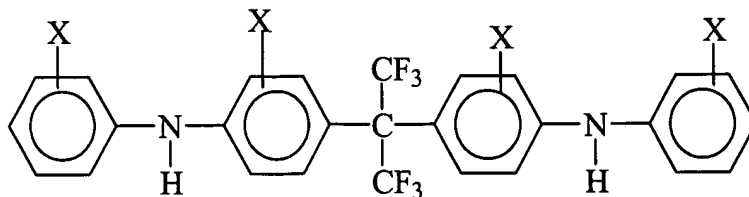
23. (Original) The process of claim 20 wherein said solvent does not solubilize said at least one fluoropolymer to a significant degree.

24. (Original) A process for producing a homogenous blend of a fluoroelastomer and a crosslinking agent comprising the steps of:

combining

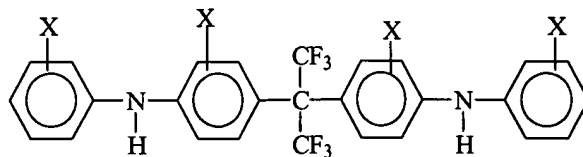


and



where X can be a hydrogen or an amine moiety and can be the same or different at different locations, and wherein at least two locations are an amine moiety, and wherein the combining step is performed in the presence of supercritical carbon

dioxide wherein the



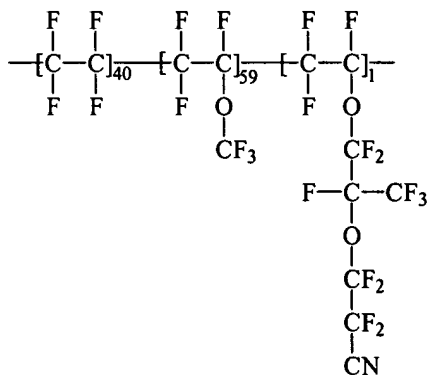
is pre-dissolved in acetone during said combining step;

allowing functional groups on the chemicals combined in said combining step to associate and form a blend; and

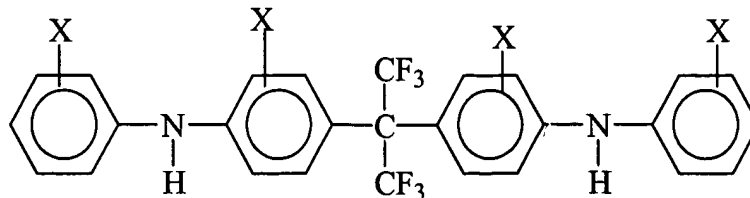
separating said supercritical carbon dioxide from said blend.

25. (Original) A homogenous blend of a fluoroelastomer and a crosslinking agent, formed by the steps of:

combining

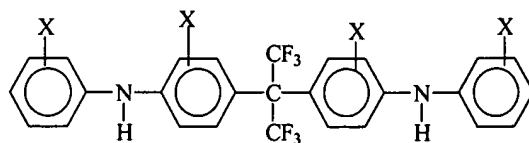


and



where X can be a hydrogen or an amine moiety and can be the same or different at different locations, and wherein at least to locations are an amine moiety, and wherein the combining step is performed in the presence of supercritical carbon

dioxide wherein the



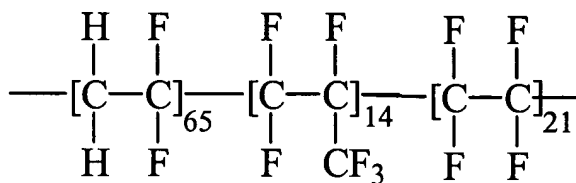
is pre-dissolved in acetone during said combining step;

allowing functional groups on the chemicals combined in said combining step to associate and form a blend; and

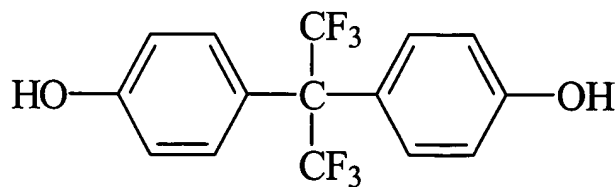
separating said supercritical carbon dioxide from said blend.

26. (original) A process for producing a homogenous blend of a fluoroelastomer and a crosslinking agent comprising the steps of:

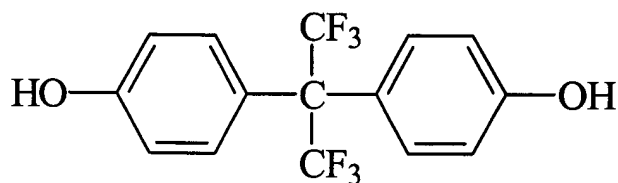
combining



and



wherein the combining step is performed in the presence of supercritical carbon dioxide wherein the



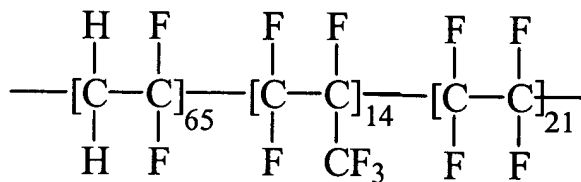
is pre-dissolved in acetone during said combining step;

allowing functional groups on the chemicals combined in said combining step to associate and form a blend; and

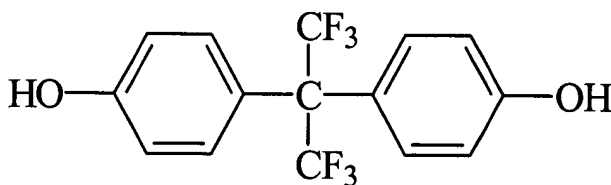
separating said supercritical carbon dioxide from said blend.

27. (Original) A homogenous blend of a fluoroelastomer and a crosslinking agent, formed by the steps of:

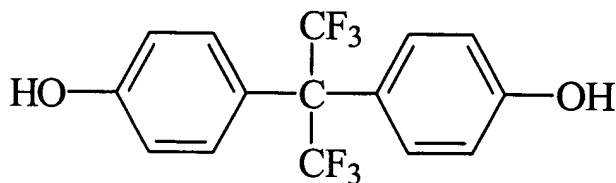
combining



and



wherein the combining step is performed in the presence of supercritical carbon dioxide wherein the



is pre-dissolved in acetone during said combining step;
allowing functional groups on the chemicals combined in said combining
step to associate and form a blend; and
separating said supercritical carbon dioxide from said blend.